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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION VII
726 MINNESOTA AVENUE
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OCT 2 1 1997

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U.S. Army Corps of Engineers
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Kansas City, MO 64106-2896

Ms. Karen Reed
DOE-Weldon Spring
7295 Highway 94 South
St. Charles, MO 63304

Dear Mr. Iverson and Ms.Reed:

Thank you for the opportunity to review and submit comments on the draft **Feasibility Study for Remedial Action for the Groundwater Operable Units at the Chemical Plant Area and the Ordnance Works Area, Weldon Spring, Missouri** and the draft **Proposed Plan for Remedial Action for the Groundwater Operable Units at the Chemical Plant Area and Ordnance Works Area, Weldon Spring, Missouri.**

The enclosed comments are the results of our review of the above referenced documents.

Please contact me if you have any additional questions or comments. I may be reached at (913) 551-7292.

Sincerely,

Tom Lorenz

Tom Lorenz
Remedial Project Manager
Federal Facilities/Special
Emphasis Branch
Superfund Branch

Enclosure

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RECYCLE

REVIEW COMMENTS ON THE FEASIBILITY STUDY FOR REMEDIAL ACTION FOR THE GROUNDWATER OPERABLE UNITS AT THE CHEMICAL PLANT AREA AND THE ORDNANCE WORKS AREA, WELDON SPRING, MISSOURI

GENERAL COMMENTS

Comment 1: Refer to RI Report Section 4.0, Baseline Risk Assessment, Section 2.2, Table 2.1, Feasibility Study, Section 1.2.1: The adequacy of the proposed action of groundwater monitoring with no further remedial action for the groundwater operable units depends heavily on the risk assessment of potential impacts to human health and the environment. For this reason, the Feasibility Study (FS) cannot be evaluated without reference to the Baseline Risk Assessment (BRA) and the RI Report.

According to the RI Report (p. 4-12) comparison with the 95% UCL for background of naturally occurring contaminants, the following species in groundwater exceeded the UCL for background by a factor of five or more: aluminum, arsenic, lead, and uranium. The following species exceeded the 95% upper confidence limit (UCL) for background by more than a factor of 10: iron, lithium, molybdenum, chloride, nitrate, and sulfate.

In the BRA, Table 2.1, the list of contaminants of potential concern (COPC) for groundwater includes only lithium, molybdenum, and uranium. Anionic complexes are also retained as COPC for groundwater . It is not clear what the basis for this reduced selection of metals is. If the concentrations of aluminum, arsenic and lead are taken as representative of natural local background, then obviously, the original background determinations are inadequate. It is not entirely clear, either, whether the rank-sum test results included in the RI Report have been used as part of the screening process. If so, it appears that there is ample site data to permit an evaluation of the underlying data distribution, and the use of parametric tests. Furthermore, as Section 1.3.1 of the FS indicates (page 1-19) comparisons were made either to the maximum or the UCL of the data set for each contaminant. The formation of a confidence limit involves the use of a known or assumed statistical distribution. If such knowledge, or such an assumption, is valid, then it is not clear why parametric, rather than rank-sum

tests have not been used. Of the metals originally detected above background, Section 1.2.1 of the FS, addresses only uranium. Because the appropriateness of the proposed action depends heavily on the adequacy of the risk assessment, this section should explain in adequate detail the "data evaluation" and screening process. Supporting documentation (the BRA) explains the screening process for spring water contaminants fairly thoroughly, but does not do so for potential groundwater contaminants. At a minimum, this explanation should start with the full list of those metals that were found to be present in groundwater , as noted above, at levels of five or more times background UCL, and explain why they were eliminated from consideration. This should involve no more than the insertion of one or two paragraphs.

SPECIFIC COMMENTS

Comment 1: Figure 1.2, Page 1-5: The popular name of the Missouri River State Trail is the "Katie Trial".

Comment 2: Section 1.3.1.1, Page 1-20: The text states that a residential scenario has been retained to establish an upper bound for human health risk. It is not uncommon for limestones to have high natural radon emissions. It is not apparent that this has been measured, or that the additive or compound effects of exposure to radiation from natural radon decay and from uranium isotope decay have been evaluated. As long as the residential scenario is being retained, the additive effects of these radiation sources should be considered. If it has been determined that radon background is, in fact, insignificantly low, then this information could be included in the discussion of exposure scenarios.

Comment 3: Section 1.4, Page 1-24: In connection with exposure at springs, the text states that CONTAMINANT concentrations are estimated to result in human health risk at lower than the low end of the acceptable risk range recommended by the EPA (i.e. 1×10^{-6} to 1×10^{-4})." However, this is not true with regard to radiological risk. The radiological risk result for a recreational visitor noted on page 1-21 overlaps the lower end of this range at 3×10^{-6}. Please revise the text to reflect this result.

Comment 4: Section 1.5, Page 1-25: Once again, the list of potential groundwater contaminants appears short with regard to metals when compared with the raw results of the RI. The explanation requested in the General Comment, above, will clarify the reasons for this reduced list of potential metallic contaminants.

Comment 5: Section 2.2.4.2, Page 2-13: The RI Report notes packer tests which yielded hydraulic conductivities on the order of 10^{-2} cm/sec. Because this kind of conductivity is associated with a relatively well sorted sand, in reference to granular aquifers at least, the statement here about low permeability could be somewhat confusing to anyone who had scanned through the tables in the RI Report to verify the statement about low permeability. In this case, the higher hydraulic conductivities appear to be associated with a horizontal zone at the base of the glacial residuum and the upper surface of the underlying Mississippian limestone where preferential lateral flow occurs (page 3-14 of the RI Report). The statement about the difficulty of introducing microorganisms and their feed would be strengthened if the text were edited to emphasize that it is *vertical* permeability which is low.

Comment 6: Section 3.3.1, Page 3-4: Suggest adding at the end of paragraph 1; Some action alternatives may also involve destruction or storage of removed contaminants in an appropriately permitted facility.

Comment 7: Section 3.3.2.2, Page 3-6: Large Volume, Long Duration Release;----The case for large volume is made here but there is no statement addressing long duration release. Is there a long duration release or is your position that there has not been a release?

Comment 8: Section 3.3.2.2, Page 3-7: Low Biotic/ Abiotic Decay Potential;---- The biotic degradation of nitroaromatics discussion did not include information about the toxicity of high concentrations of nitroaromatic completely blocking their biotic degradation.

Comment 9: Section 3.2.2.2, Page 3-9: The text at the top of the page includes a statement about slug test results in the range of 2.1×10^{-8} to 2.8×10^{-5} cm/sec. However, while Bouwer and Rice is a very flexible technique, it was developed on a steady-state, granular model (it uses a form of the Theim equation, and involves flow over the entire screened interval of the well). The screen length appears in the denominator of the equation used to determine the value of K, the hydraulic conductivity. The bulk of the porosity in the limestones in the near surface beneath the Weldon Spring site is horizontal fracture porosity, according to the RI Report. This means that it is possible that the entire screened length is not contributing to flow into the well, and that the parameter representing screen length in the equation should be reduced by some amount. This would result in a somewhat higher estimate of K. The authors of the FS should consider whether the slug test numbers should be qualified as possibly underestimating the true value of K. If there is information that supports the contention that flow in the shallow limestone aquifer approximates steady-state Darcian flow for much of the aquifer, it would be useful to state it very briefly here.

Comment 10: Appendix D, Page D-4: The text indicates that BIOSCREEN is based on Domenico's 1987 model, and takes into account advection, dispersion, adsorption and first order decay. Such models are typically based on something like the Ogata-Banks equation or some variant. As such, these models do not account for advection *alone*, which would be the only significant process if the TCE somehow made it to one of the subsurface conduits indicated in the RI Report. The improbability of TCE reaching one of these conduits should probably be emphasized somewhere in the introductory text of this appendix.

MINOR COMMENTS

Comment 1: Section 1.5, page 1-26: In the paragraph beginning" No Federal or state MCL...," the text notes that a final EPA rule set the concentration limit for uranium at uranium-processing sites at 30 pCi/L. In the next sentence this is mistakenly changed to 30*mg*/L. Please correct the text.

Comment 2: Table 1.1, Page 1-9: Typo in the Hydrostratigraphic Unit column, third entry down.

Comment 3: Table 2.9, Page 2-9: Typo in the Effectiveness column, line 7 of first entry.

Comment 4: Section 3.3.2.2, Page 3-9: Typo in third line of second bullet.

REVIEW COMMENTS ON THE DRAFT PROPOSED PLAN FOR THE GROUNDWATER OPERABLE UNITS AT THE CHEMICAL PLANT AREA AND THE ORDNANCE WORKS AREA, WELDON SPRING, MISSOURI

Comment 1: Section 2.2.4, Page 10: Second paragraph, line 3; we suggest rewording the term "drilling". In a document that has used the word drilling to convey the action of making a hole in the ground with an auger device, this use of the term may be misconstrued.

Comment 2: Table 1, Page 19: The footnotes of this table may be a good place to remind the reader that contingency plans and institutional controls are also available to should the residential scenario become a reality.

Comment 3: Section 5.1.2, Page 25: We suggest that you consider reviewing the monitoring and the groundwater data three years after the removal/destruction actions associated with Operable Unit 1 are completed. Decisions related to modifying the monitoring plan could be considered then. After the first review subsequent reviews would be done every five years until the data indicated that there was no further need.